

THE GENITALIA OF THE JUNCUS-FEEDING SPECIES OF 13820 EUIPISTA (LEP.).

(With Plate I.)

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The *Juncus*-feeding moths of the genus *Eupista* (*Coleophora*) resemble each other very closely and their reliable identification on external characters often is a matter of considerable difficulty, even with good specimens. The simplest and most reliable way of identifying them is by examination of the genitalia. Unfortunately some of the figures given in Pierce's "Genitalia of the Tineina" (1935) are very inaccurate and therefore misleading. Incidentally, it may be mentioned that the same applies to Pierce's figures of other species of the genus.

Two of the seven *Juncus*-feeding species are inhabitants of salt-marshes and have not been found in Ireland, but the genitalia of the remaining five species are shown in pl. I. The figures of each species represent the male genitalia ventral view with the valvae outspread and side view with the valvae in the normal closed position, and the female ventral view. The material examined consisted of 50 preparations of the genitalia of *glaucolella*, 30 of *caespititiella*, 29 of *agrammella*, 20 of *galactaula*, and 10 of *tamesis*. The specimens were all from my own collection and were captured in Ireland.

If the genitalia of a large number of specimens from different parts of the British Isles are examined many interesting discoveries should be made. For instance, certain species may be found to be far more common and widely distributed than is supposed; during 1944 I captured 93 specimens at random and on examination of the genitalia found that they consisted of 30 *glaucolella*, 24 *agrammella*, 16 *galactaula*, 5 *tamesis*, and only 18 *caespititiella*; *tamesis*, formerly recorded only from Oxford, has proved to be widely distributed in Ireland, having been found in counties Dublin, Leix and Kerry.

E. agrammella, Wood (figs. 1, 6, 11): Pierce's figure of the male (*loc. cit.*, pl. XXXIV) apparently represents *caespititiella*, and his description of the supposed differences between the two species can be explained by differences in mounting. His figure of the female has several misleading inaccuracies. *E. tamesis*, Waters (figs. 2, 7, 14): Some differences from Pierce's figures are apparent, notably in the general shapes of the genitalia in both sexes and in the shapes and relative sizes of the various parts. The same applies to *E. glaucolella*, Wood (figs. 4, 9, 14), to *E. caespititiella*, Zell. (figs. 3, 8, 15), and to *E. galactaula*, Meyr. (*alticolella*, Meyr. *nec.* Zell.) (figs. 5, 10, 13). It is difficult to explain why Pierce's figure of the male *galactaula* should be so inaccurate; I have seen his preparation which, although somewhat distorted, is very like what I have figured.

The genitalia of these five species indicate a close relationship between *agrammella* and *tamesis* and between *caespititiella* and *glaucolella*. *Galactaula* is rather distinct, but is nearest to *glaucolella*.

Some notes on a rapid method of preparing genitalia for the identification of specimens may be useful. Firstly, remove the abdomen from the specimen and boil it up in a weak (5 or 10%) solution of caustic potash until it becomes soft and all waste matter has disappeared, leav-

ing the sclerotised and membranous parts. With *Eupista* this normally takes three to five minutes, but takes longer for larger specimens. The caustic solution may be heated in a watch-glass over a water-bath or in a test-tube in a beaker of water. Then transfer the abdomen to acetic acid. While in the acid the scales may be scraped gently off the abdomen with a needle and the genitalia drawn out of the terminal abdominal segments into which they often are retracted. It is most convenient to have the acid in a watch-glass or, better, in the cavity of a hollow-ground slide. After a few minutes in the acid, transfer the genitalia to a drop of Faure's Medium on a slide, arrange in position, and apply a coverglass. The advantages of this method are that a large number of preparations may be made in a relatively short time; while one specimen is in the caustic another is in the acid and a third is being mounted on a slide, that it is not necessary to dehydrate when using Faure's, the specimen being mounted directly from the acid, and that the Faure's keeps the genitalia soft so that they may be removed and dissected or remounted months or even years afterwards.

EXPLANATION OF PLATE.—Genitalia of the *Juncus*-feeding species of *Eupista*: figs. 1-5 males, ventral views with valvae outspread; figs. 6-10 males, lateral views with valvae in normal closed position; figs. 11-15 females, ventral views.

THE GENETICS OF CROCALLIS ELINGUARIA, L., AB. FASCIATA, GILLMER, AB. BREVIPENNIS, AB. NOV., AND AB. UNICOLOR, PROUT.

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In addition to his extensive breeding experiments with *Angerona prunaria*, L., the late Dr H. D. Smart bred *Crocallis elinguaris* for three years, using as stock the offspring of three females obtained in Skye, which he called broods A, B, and C.

Brood A consists of ab. *fasciata*, which are as fine as any I have seen. The ground colour is free from speckling and more orange than the straw colour of typical specimens (light orange yellow, Ridgway) with a rich brown median band (Sayal brown, Ridgway) and very dark ante-median and postmedian lines in the males. The median area in the females is not as brown, but the lines are as distinct.

Brood B. The ground colour in all the males has brown scales mixed with the paler ones, producing a colour near warm buff, Ridgway, and the band is a little darker than the ground with a paler line on its inner and outer aspect. Seven are darker (tawny olive, Ridgway), and in one of them the band is very dark. The females are paler, one being intermediate between pale orange yellow and light orange yellow, Ridgway, others paler buff than the males.

Brood C. Both sexes vary from pale orange yellow to light orange yellow with the median area in one male and two females almost the same colour as the ground colour, others with it darker, but in none is it as dark as in ab. *fasciata* nor are the ante- and postmedian lines as dark.